



**KETO 2000-SERIES  
SINGLE GRIP HARVESTERS  
51 100 150 500 800 1000**

## **INSTRUCTIONS FOR INSTALLATION, USE AND MAINTENANCE**



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## **SAFETY PRECAUTIONS**

Read these instructions before taking the harvester in use.

Working with a harvester always involves great safety risks. These instructions comprise the most important things you ought to remember in order to understand and avoid safety risks.

The high-pressure hydraulics produces great forces, which transfer large masses. These masses can cause dangerous situations to the operator and other persons, machines and objects nearby.

**THE SAW** is extremely dangerous:

The saw is made efficient so that trees can be felled safely. The chain has a speed of 35 m/s when sawing in the tree. By free running the speed is even much higher. **SPLINTERS FROM A SNAPPING CHAIN HAVE THE SAME KINETIC ENERGY AS A PISTOL BULLET.** Splinters have caused injuries at a distance of even 100 metres from the machine.

- **NEVER USE THE SAW SO THAT THE SAWBAR IS DIRECTED TOWARDS THE CAB OR OTHER PERSONS.**

Besides **THE DANGER OF SPLINTERS** also **AN UNBROKEN RUNNING SAW IS DANGEROUS.**

- **NEVER TAKE SUCH A POSITION THAT THE SAW CAN HIT YOU.**

**WHEN YOU HAVE TO CARRY OUT SERVICE OR ADJUSTMENTS PAY ATTENTION TO THE MOVING PARTS OF THE MACHINE.**

- **NEVER GO to a place where you might get caught between the tracks or the delimiting knives. Always KEEP IN MIND, that although the engine and the hydraulic pump have stopped, the action of the hydraulic valves can release the hydraulic pressure and cause movements. Always SWITCH OFF THE ENGINE before you approach the harvester.**

If you have to carry out service or adjustments with the engine in operation, remove the chain and the sawbar before servicing.

## **SAFETY PRECAUTIONS WHILE WORKING**

**FIRST STUDY THIS MANUAL AND THEN THE MACHINE.**

### **DANGER RANGE**

The danger range of a harvester is twice the length of the tree to be felled in every direction. Persons are not safe until 70 metres from the harvester.

## THE TREE MIGHT FALL IN THE WRONG DIRECTION

The operator and the onlookers always have to be prepared for the tree falling in another direction than intended. There are many reasons why the tree falls in the wrong direction, for instance

The operator makes a misjudgement of the weight of the tree, the wind direction and force, the length of the tree or the natural inclination of the tree.

The operator weights wrongly with the loader or pushes by mistake another button than intended.

If the felling sawing fails, and normal felling of the tree has to be interrupted, the wind can fell the tree later on.

There is something wrong with the harvester preventing the intended motion. For instance a hydraulic hose can break, the harvester can get some electrical fault or valve fault causing the harvester not to obey given commands.

A sudden shift of wind changes the direction of the tree.

If the snow falls off only on one side of the tree, the centre of gravity is suddenly changed.

The tree changes direction when it hits another tree.

## VEHICLE STABILITY

Ensure that the vehicle is on a sufficiently solid foundation. Also consider the inclination of the machine.

## SWITCH OFF THE MACHINE WHEN A FAULT OCCURS

Never start the repairs before the machine has been switched off.

## LOOK OUT FOR HIDDEN FORCES

Take into consideration the forces of for instance a tree strained behind another tree.

When feeding the tree the top will be released from behind the other tree and the tree can suddenly turn.

## NOTE THE DISTANCE FROM HIGH TENSION LINES

Don't go near tension lines.

Distance of tension lines from the ground:

Tension	Distance
380/220 V	ca. 4,5m
6-45 V	ca 5 m
110 KV /or more	ca.6m

Notice that the distance can be smaller if the tension lines are loaded by snow and ice.

## SAFETY STICKERS

The owner of the machine and/or the employer is obliged to see to it that the stickers below always are in place on the machine. New stickers can be ordered as spare parts. The stickers are explained below.

The stickers are all placed inside the block guard to avoid wearing.

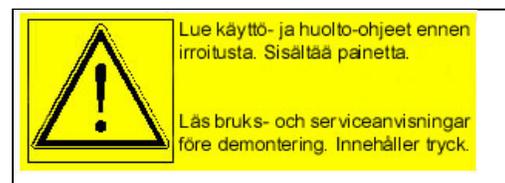
### Sticker 1

Use protective gloves when you carry out service on the sawbar.



### Sticker 2

Warning of the pressure in the accumulator.



Stickers 3 & 4

Avoid touching the hot surface and read the instruction manual before starting the adjustments. There is a risk of getting your fingers flattened.



Sticker 5

Risk of falling load. Keep distance.



# GUARANTEE TERMS

Kone-Ketonen Oy undertakes according to these guarantee terms to repair failures that are caused by defect in raw material and manufacture of a harvester that the company has delivered as new, if the manufacturer has verified and accepted these failures.

1. **The guarantee period is 6 months or 1000 hours.**  
The guarantee period starts from the delivery date. The guarantee of repairs performed during the guarantee period expires at the same time as the guarantee period of the machine expires.
2. When working in cold circumstances, the guarantee is valid only provided that the outdoor temperature is not below -25 °C .
3. **The following parts are replaced based on the guarantee**
  - parts made by the manufacturer
  - parts acquired from subcontractors, as far as they are included in the subcontractor's guarantee.
4. **The guarantee does not include**
  - ordinary wearing parts such as hoses, packings, sawbars, saw chains and filters
  - wearing accessories such as protection plates, rubber products and connectors
  - failures caused by natural wearing
  - stoppage days or other indirect damages
  - direct or secondary failures caused by use of parts that are not original manufacture
  - damages caused by misuse
  - compensations for work on overtime and public holidays
  - freight and postal charges
  - if the owner changes
  - failures in for instance valves and hydraulic motors due to hydraulic oil impurity
  - sensors, if they have external damages or if they have broken due to careless operation of the harvester for instance hard shocks.
  - If the pressure relief or pressure reducing valves have been adjusted without the manufacturer's permission or instruction and this has resulted in for instance considerable wear of the tracks.
  - If the harvester is transferred to another country after the commissioning
5. **A claim to compensation according to the guarantee is handled only based on notification in writing.**  
The claim to compensation according to the guarantee is made up by the purchaser or his representative (also the seller) and it has to be sent to Kone-Ketonen to Kristiinankaupunki within 14 days from the day of the damage. The manufacturer is not obliged to handle an application for guarantee compensation that has not arrived at Kone-Ketonen Oy within one (1) month from the day of the damage. The damaged parts are to be sent to Kone-Ketonen Oy to Kristiinankaupunki or to the importer of Keto-harvesters together with the application for guarantee compensation.

6. **A condition for granting guarantee compensation is that**
- The damage has happened under operation conditions that are to be considered normal.
  - The manufacturer's instructions for use and maintenance have been observed.
  - The guarantee repair has been carried out by the machine seller or a repair mechanic authorized by his representative.
  - Original spare parts have been used in the repair and service.

7. **Notice of the guarantee decision is given verbally by phone or in writing .**

The guarantee parts are to be ordered from the manufacturer. In urgent cases a guarantee decision can be inquired for directly from Kone-Ketonen. A separate agreement in writing between the purchaser and Kone-Ketonen is made, if possible deviations from the guarantee terms are to be valid.

## **1. PRESENTATION OF KETO-HARVESTERS AND THE MAIN PARTS**

The Keto-harvester has a dual track feeding system. It is intended for felling of standing trees, delimiting, cross-cutting and stacking.

The Keto harvesters have a light frame construction in relation to their efficiency and they are adapted for thinning work as well as demanding final fellings. Their advantages are ingenious hydraulics and superior track feeding system that does not cause damage to growing trees.

### **1 The main parts of Keto-harvesters**

#### **1.1 Feeding equipment**

The feeding equipment consists of the parts feeding the trunk forward and backward. The trunk is touched by the tracks.

The tracks are driven by hydraulic motors. The tracks also have a firm grasp of the trunk.

#### **1.2 Cross-cutting equipment**

The cross-cutting equipment consists of the parts associated with the saw. It includes a hydraulic motor driving the saw chain and a cylinder feeding the sawbar into the trunk. In addition it contains the saw chain lubrication device.

#### **1.3 Delimiting knives**

The delimiting knives lop the branches off the trunk. The Keto harvester has three delimiting knives, one fixed and two moving knives. The shape of the knives and the motions of the moving knives are designed to follow trunks of different sizes.

The delimiting knives also steer and support the trunk. Together with the tracks and the frame construction they determine the position of the trunk in the grab.

#### **1.4 The Tilt**

The tilt lifts the grab vertically. The tilt makes it possible to fell standing trees.

#### **1.5 The control unit and the measuring device of the harvester**

The control unit and the measuring device are partly associated with each other. Originally the control unit was only a relay box and the commands given via the push-buttons of the relay box were transmitted to the magnetic valves of the harvester.

Now the harvester control unit is closely associated with the measuring device. There are different types of computer. The measuring device measures the length and the diameter of the trunk. Based on this measurement the trunk is processed to special dimensions.

Among the accessories of the measuring device there are also test programs able to locate for instance a fault in the electric system.

## **2. HEAD IDENTIFICATION PLATE**

The head identification plate on the harvester includes the type of the machine, the serial number and year of manufacture.

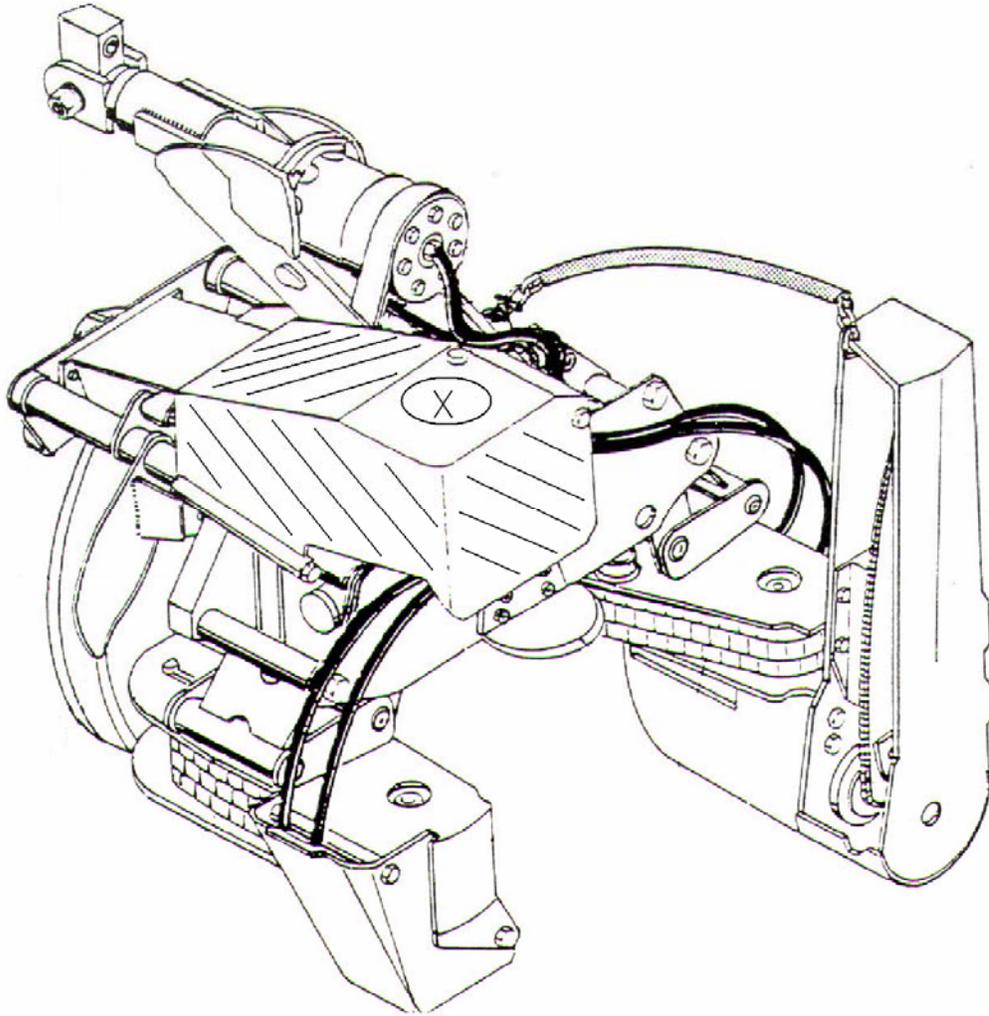
In connection with spare part orders and service guidance the serial number and the year of manufacture have to be given.

Head identification plate:

<b>KONE-KETONEN OY</b>	
64100 Kristiinankaupunki	Finland
1.Type	<input type="text" value="KETO-100 HARVESTERI"/>
2.Manuf.no	<input type="text" value="0"/>
3.Year	<input type="text" value="2000"/>
Made in Finland	

Explanation of the fields:

- 1.Type= Type of harvester
- 2.Manuf.no= needed when ordering spare parts.
- 3.Year= Year of manufacture (has to be given when ordering spare parts).



Picture 1.

The head identification plate of the harvester is situated under the large block guard, beside the hydraulic block. In picture 1 The guard is marked with X and ruled. The harvester Keto-51 makes an exception with the head identification plate in the electric cover.

### **3. TAKING THE HARVESTER INTO USE**

#### **3.1 Attachment of the harvester to the boom**

Place the harvester attachment pin in such a direction that the nut is on the left hand side of the boom. Then it does not rub the hoses, which are on the right hand side of the boom. Tighten the nut of the harvester attachment pin.

#### **3.2 Installation of hydraulics**

##### **3.2.1 Attachment of hydraulics**

Check that the hoses are not twisted. If some hose is stressed, open the coupling slightly and turn the hose into a better position.

##### **3.2.2 Installation of electric cable**

Attach the couplings and the protective hose. Finally wind a protective spiral around the whole hose bundle.

See the service instructions, the sections Starting to use a new harvester and Lubrication. Carry out basic lubrication before taking the machine into use.

##### **3.2.3 Machine start-up**

When the harvester has been attached to the vehicle and it has been checked that all hoses are in their right positions the engine can be started.

As there is air in the harvester , it might make unintentional motions in connection with the start. Nobody is allowed to be near the grab.

Remove the air from the harvester by carrying out all motions until they work normally. Be cautious in the beginning when performing the motions.

Turn the rotator and press the tilt button to and fro. Follow the hydraulic hoses from the end of the boom to the harvester. If they get twisted or get stuck somewhere, open the hose couplings and give the hoses a suitable initial tension in some direction.

## **4. SERVICE INSTRUCTIONS**

### **4.1 Safety during the service work**

Always lower the loader, connect the parking brake, switch off the engine and the current before leaving the cab in order to carry out service, repairs or adjustments on the harvester.

When servicing the harvester, remember that the crane can keep the harvester in vertical position only for a while.

Place the harvester in such a position that it cannot move. If the harvester must be left in vertical position, place it onto a stump so that the stump prevents the saw from coming out.

When adjusting or servicing the saw, make sure that there is no-one in the cab operating the loader control levers or the harvester push-buttons.

Use gloves when changing and tightening the sawbar or the chain, because the chain is very sharp.

Never open or tighten pressurized hydraulic couplings.

### **4.2 Starting to use a new harvester**

#### Lubrication

A new harvester has to be lubricated every day at first.

#### Oil tank for saw chain lubrication

Fill the lubricating oil tank with saw chain oil.

#### Oil leaks

Look for oil leaks in the hose couplings and eliminate them by tightening. If moderate tightening does not stop a leak, the joint must be reconstructed.

#### Check the screw tightness

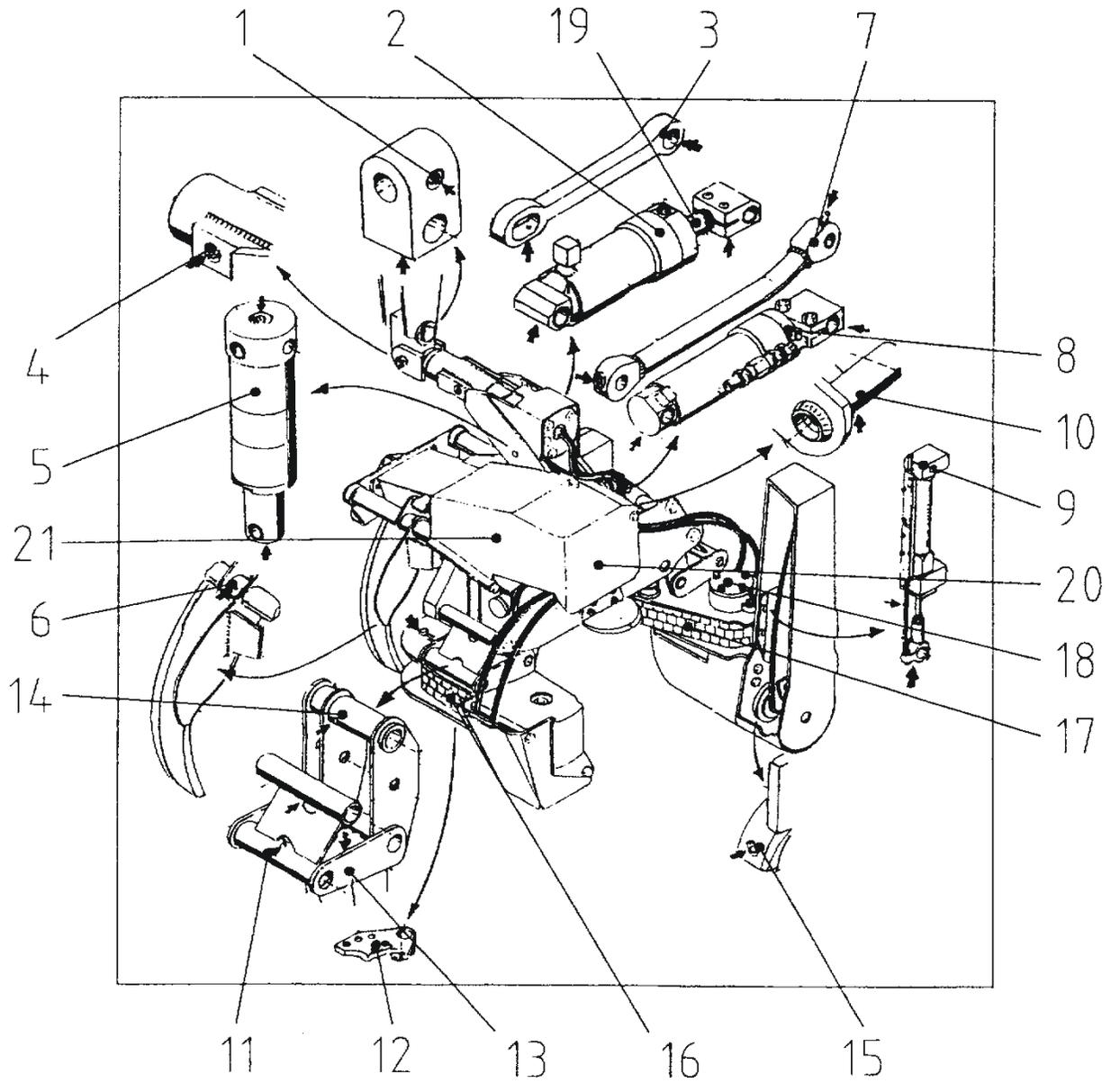
The screw tightness has at first to be checked every day.

#### Adjust the settings

The sawbar position in the saw casing (the distance of the saw chain from the back wall of the saw casing) has to be checked often at first, because the stopper surfaces wear and change shape quickly at the beginning.

If the harvester does not work well, it can be adjusted according to the instructions.

### 4.3 Service objects



### 4.3.1 Chart

	<u>Service object</u>	Number of nipples	Service interval (hours in use)				
			25	50	250	1000	2000
1.	Bracket pin	1	X				
2.	Knife cylinder	2	X				
3.	Knife rod	2	X				
4.	Tilt shaft	2	X				
5.	Tilt cylinder	2	X				
6.	Knife pins	2	X				
7.	Track rod	2	X				
8.	Track cylinder	2	X				
9.	Saw cylinder	1		X			
10.	Tilt attachment pin	1	X				
11.	Outer linkages	2	X				
12.	Track holding plate nipple	1		X			
13.	Tower nipple	1		X			
14.	Inner linkage	2		X			
15.	Frame of saw bar mount	1		X			
16.	Definition of track condition	-					X
17.	Check track rails (also plastic wear pad)	-				X	
18.	Control of engine packings	-					X
19.	Cylinder packings	-					X
20.	Saw relief valve. Control	-					X
21.	Control of security stickers	-				X	

### 5. Hydraulic chart

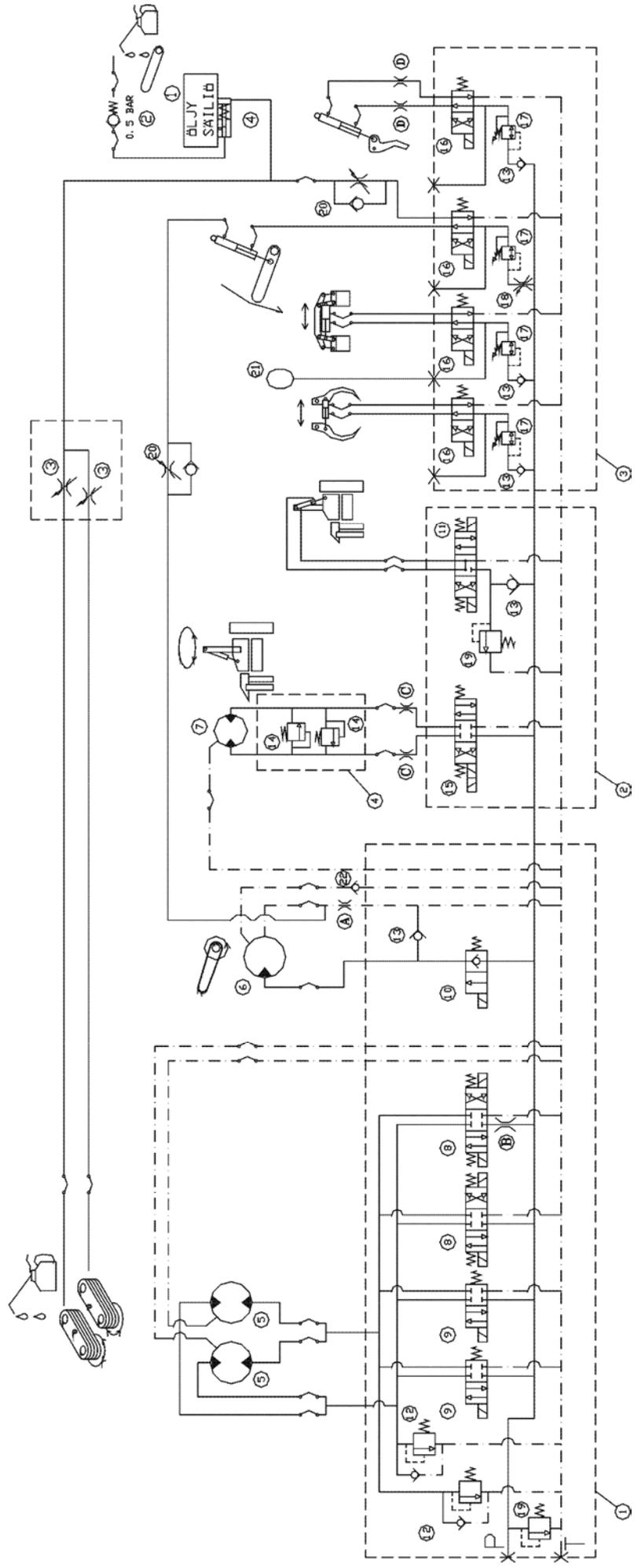
Direction valves of different trademarks are used in the hydraulic block of the 2Lsystem. For this reason the spare catalogues only mention the originally used valves. There is a separate list of other direction valves used after the spare part catalogues, and the spare part catalogue also includes their ordering numbers.

When ordering direction valves or any other kind of valves, mention: the name of the valve, how many coils there are in the valve and the voltage of the coils (12V or 24V). Thus you ensure that you will get the correct valve, and make our spare service easier.

The lubrication charts are shown separately after the hydraulic charts.

# KETO 2L-HYDRAULIC CHART

KETO-51Victor, KETO-100 Victor

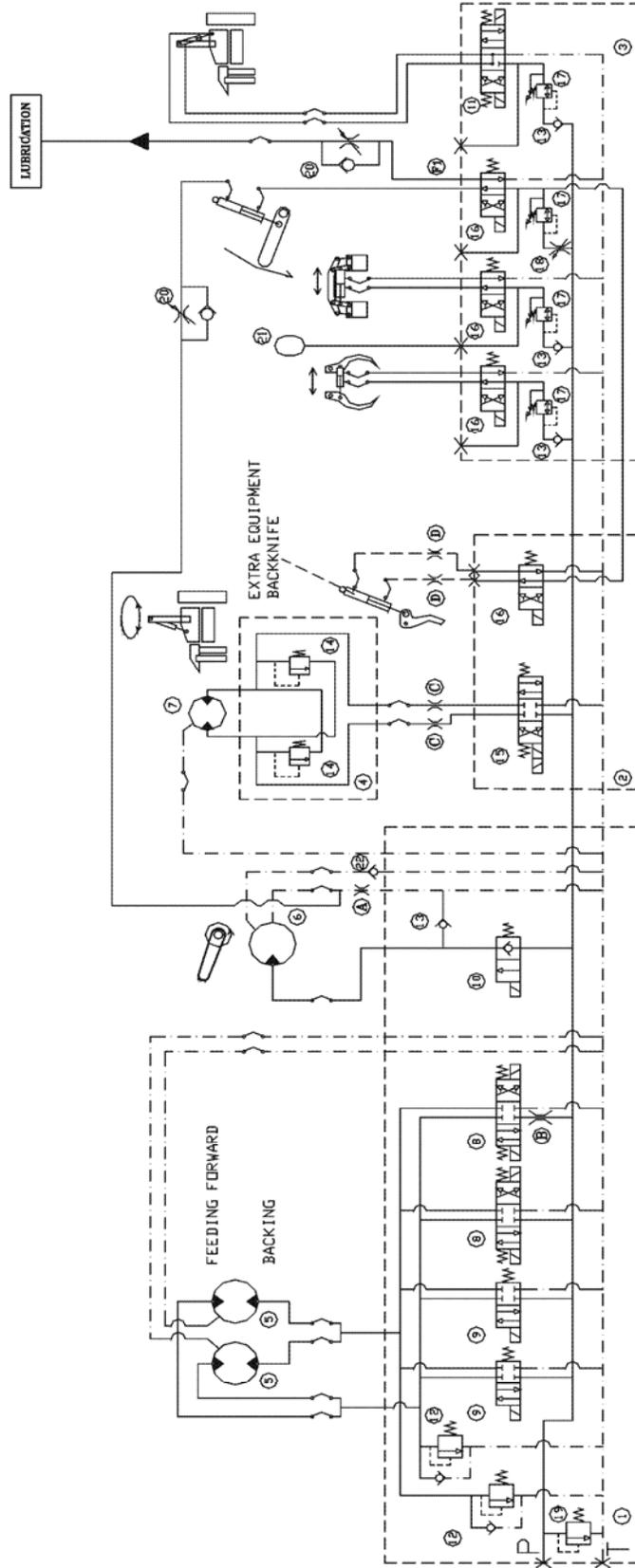


## KETO 2L-HYDRAULIC CHART

Versio: Victor				
POS	NAME	HUOM/NOTE/BEMERKNUNG	Kpl./ Pcs / St.	
			51victor	100victor
1	Big block		1	1
2	Intermediate block		1	1
3	Small block		1	1
4	Rotator block		1	1
5	Track motor	Danfoss OMEW 200 / OMEW 160	2	
5	Track motor	Danfoss,OMTU250/K/OMTU200/K		2
6	Saw motor	Volvo F11-10/K	1	1
6	Saw motor	Volvo F11-19/K		1
7	Rotator motor	Danfoss OMH 400	1	
7	Rotator motor	Danfoss OMH 500		1
8	Direction valve	Denison 4D01 3203 A302 B1G0Q	2	2
9	Direction valve	Denison 4D01 3103 A501 B1G0Q	2	2
10	Saw valve	Sterling GS06 08 00N	1	1
11	Magnetic valve	Cornatrol 06/43 09	1	1
12	Pressure reducing valve	TBS 125/240	2	2
13	Relief valve	CV3-010	5	5
14	Rotator pressure reducing valve	TBA 100/175	2	2
15	Magnetic valve, rotator	Cornatrol 06/43 06	1	1
16	Magnetic valve	Cornatrol 06/42 05	4	4
17	Pressure relief valve	Comm. Control PRRS 10NS0S50	4	4
18	Saw cylinder adjustable choke	Vickers FCYS 10 SD NVF	1	1
19	Pressure reducing valve	TBA 100/250	2	2
20	Flow control with check valve	FT 1251/1-1-14	2	2
21	Accumulator		1	1
22	Check valve	0,5 bar letkuasenteinen	1	1
23	Lubrication pump	Hultain SO2	1	3
24	Lubrication tank		1	1
A	Choke nipple	Ø5, F11-10 / Ø7, F11-19	1	1
B	Choke nipple	Ø1,5	2	2
C	Choke nipple	Ø1,2	2	2
D	Choke nipple	Ø1,5	1	1

# KETO 2L-HYDRAULIC CHART

KETO-51, KETO-100, KETO-150



- Ⓐ  $\phi$ 5mm KETO-51, KETO-100;  $\phi$ 7mm KETO-150, KETO-500
- Ⓑ  $\phi$ 2-4mm
- Ⓒ  $\phi$ 1.2mm KETO-51, KETO-100, KETO-150
- Ⓓ  $\phi$ 1.5mm KETO-51, KETO-100, KETO-150

2L-001	Use Käyttö	Usan tai kokoonpano-Standardi Käyttö, malli Luettu	Kpl
Yleistole- ranssi	Tavaratunnus Mittä- koko	normin nimi tai Luetto	
all. sum. tark. hyv	Mittä- koko		
	Massa		
		<b>Keto-Harvesters</b>	
		P:\RYDRA\KIRJA\2L	
			2L-001
			01.12.01.1988

**KETO 2L-HYDRAULIC CHART**

Version: 2L-001

POS	NAME	NOTE	pcs/machine		
			51	100	150
1	Big block		1	1	1
2	Intermediate block		1	1	1
3	Small block		1	1	1
4	Rotator block		1	1	1
5	Track motor	Danfoss OMSU 200/K or (OMSU 160/K)	2		
5	Track motor	Danfoss OMSU 200/K		2	
5	Track motor	Danfoss OMTU 315/K or (OMTU 250/K)			2
6	Saw motor	Volvo F11-10/K	1	1	
6	Saw motor	Volvo F11-19/K			1
7	Rotator motor	Danfoss OMH 400	1	1	1
8	Direction valve	Hägglund-Denison 4D01 3203 A302 B1G0Q	2	2	2
9	Direction valve	Hägglund-Denison 4D01 3103 A501 B1G0Q	2	2	2
10	Saw valve	Sterling GS06 08 00N	1	1	1
11	Magnetic valve	Comatrol 06/42 05		1	
11	Magnetic valve	Comatrol 06/43 08	1		1
12	Pressure reducing valve	TBA 100/240	2	2	2
13	Relief valve	CV3-010	3	3	3
14	Pressure reducing valve	TBA 100/175	2	2	2
15	Magnetic valve	Comatrol 06/43 06	1	1	1
16	Magnetic valve	Comatrol 06/42 05			
17	Pressure reducing/relief valve	Command Control PRRS 10 N S 0S 50	4	4	4
18	Saw cylinder adjustable choke	Vickers FCVS 10 SD NVF	1	1	1
19	Pressure reducing valve	TBA 100/250	1	1	1
20	Flow control with check valve	FT 1251/1-1-14	2	2	2
21	Accumulator		1	1	1
22	Check valve	0,5 bar mounted on hose	1	1	1



## KE TO 2L-HYDRAULIC CHART

Version: 2L-LD001

POS	NAME	NOTE	pcs/machine		
			51LD	100LD	150LD
1	Big block		1	1	1
2	Intermediate block		1	1	1
3	Small block		1	1	1
4	Rotator block		1	1	1
5	Track motor	Danfoss OMSU 200/K or (OMSU 160/K)	2		
5	Track motor	Danfoss OMTU 250/K or (OMSU 200/K)		2	
5	Track motor	Danfoss OMTU 315/K or (OMTU 250/K)			2
6	Saw motor	Volvo F11-10/K	1	1	
6	Saw motor	Volvo F11-19/K		1	1
7	Rotator motor	Danfoss OMH 400	1	1	1
8	Direction valve	Hägglund-Denison 4D01 3203 A302 B1G0Q	2	2	2
9	Direction valve	Hägglund-Denison 4D01 3103 A501 B1G0Q	2	2	2
10	Saw valve	Sterling GS06 08 00N	1	1	1
11	Magnetic valve	Cornatrol 06/43 09	1	1	1
12	Pressure reducing valve	TBA 100/240	2	2	2
13	Relief valve	CV3-010	3	3	3
14	Pressure reducing valve	TBA 100/175	2	2	2
15	Magnetic valve	Cornatrol 06/43 06	1	1	1
16	Magnetic valve	Cornatrol 06/42 05	4	4	4
17	Pressure reducing/relief valve	Command Control PRRS 10 NS 0S 50	4	4	4
18	Saw cylinder adjustable choke	Vickers FCVS 10 SD NVF	1	1	1
19	Pressure reducing valve	TBA 100/250	1	1	1
20	Lock valve system		1	1	1
21	Flow control with check valve	FT 1251/1-1-14	2	2	2
22	Accumulator		1	1	1
23	Check valve	0,5 bar mounted on hose	1	1	1
24	Flow control with check valve	FT 1254/5-1-14	1	1	1



## KETO 2L-HYDRAULIC CHART

Version: 2L-HD001

POS	NAME	NOTE	pcs / machine	
			150HD	500HD
1	Big block		1	1
2	Intermediate block		1	1
3	Small block		1	1
4	Rotator block		1	1
5	Track motor	Danfoss OMTU 315/K	2	
5	Track motor	Danfoss OMTU 400/K		2
6	Saw motor	Volvo F11-19/K	1	1
7	Rotator motor	Danfoss OMH 400	1	1
8	Direction valve	Hägglund-Denison D01 3203 0302 B1G0Q	1	1
9	Saw valve	Sterling GS06 08 00N	1	1
10	Direction valve	Mecman Wevde 43 D 10 1 DC	2	2
11	Relief valve	CV3-010	4	4
12	Pressure reducing valve	TBA 100/175	2	2
13	Magnetic valve	Hägglund-Denison 4D01 35 203 A302 00A11 G0	1	1
14	Magnetic valve	Hägglund-Denison D01 35 111 0101 00B1 G0Q	3	3
15	Pressure reducing/relief valve	Command Control PRRS 10 NS 0S 50	4	4
16	Saw cylinder adjustable choke	Vickers FCVS 10 SD NVF	1	1
17	Pressure reducing valve	TBA 100/250	2	2
18	Relief valve	Sun 9ES5	1	1
19	Flow control with check valve	FT 1251/1-1-14	2	2
20	Accumulator		1	1
21	Magnetic valve	Hägglund-Denison 4D01 3208 0302 B1G0Q	1	1
22	Magnetic valve	Comatrol 06/42 05	1	1
23	Check valve	0,5 bar mounted on hose	1	1
24	Flow control with check valve	FT 1254/5-1-14	1	1
25	Extension block	NS06	1	1
26	Direction valve	Mecman Wevde 42AD 10 1 DC	1	1



## KETO 2L-HYDRAULIC CHART

Version: 2L-002 (korj.23.11.1998)

POS	NAME	NOTE	PCS
1	Big block		500
2	Intermediate block		1
3	Small block		1
4	Rotator block		1
5	Track motor	Danfoss OMTU 400/K	2
6	Saw motor	Volvo F11-19/K	1
7	Rotator motor	Danfoss OMH 400	1
9	Direction valve	Mecman Wevde 42AD 10 1 DC	1
10	Saw valve	Sterling GS06 08 00N	1
11	Direction valve	Mecman Wevde 43 D 10 1 DC	2
12	Pressure reducing valve	TBA 100/250	1
13	Relief valve	CV3-010	4
14	Pressure reducing valve	TBA 100/175	2
16	Magnetic valve	Hågglund-Denison D01 35 111 0101 00B1 G0Q	2
17	Pressure reducing/relief valve	Command Control PRRS 10 NS 0S 50	3
18	Saw cylinder adjustable choke	Vickers FCVS 10 SD NMF	1
19	Pressure reducing valve	TBA 100/250	2
21	Relief valve	Sun 9ES5	1
22	Flow control with check valve	FT 1251/1-1-14	2
23	Accumulator		1
24	Magnetic valve	Hågglund-Denison 4D01 3208 0302 B1G0Q	1
25	Magnetic valve	Comatrol 06/42/05	1
26	Check valve	0,5 bar mounted on hose	1
27	Flow control with check valve	FT 1254/5-1-14	1



## KETO 2L-HYDRAULIC CHART KETO-750 / KETO-1000

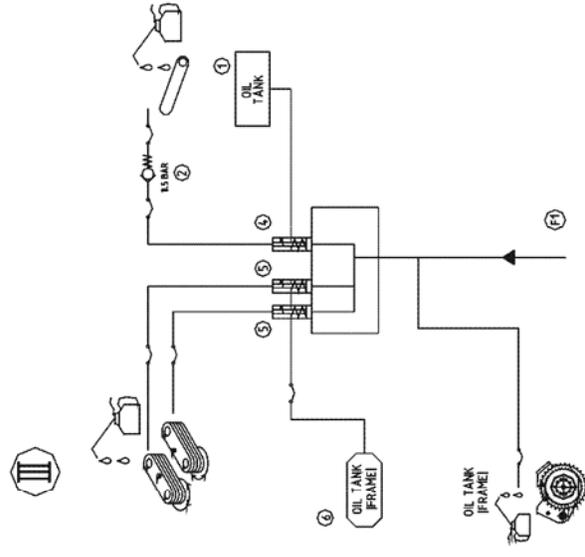
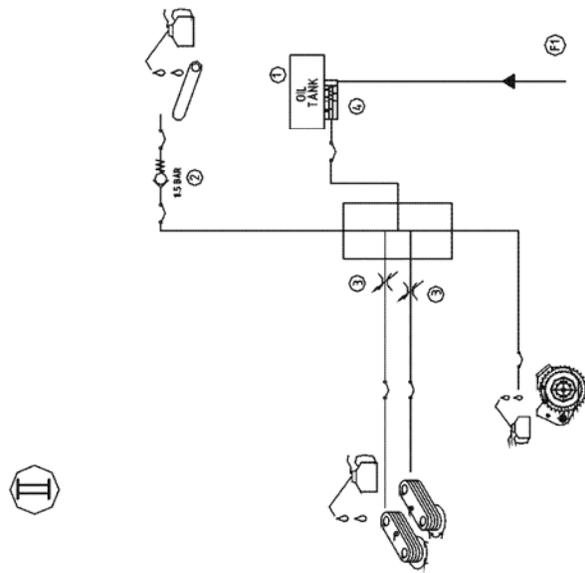
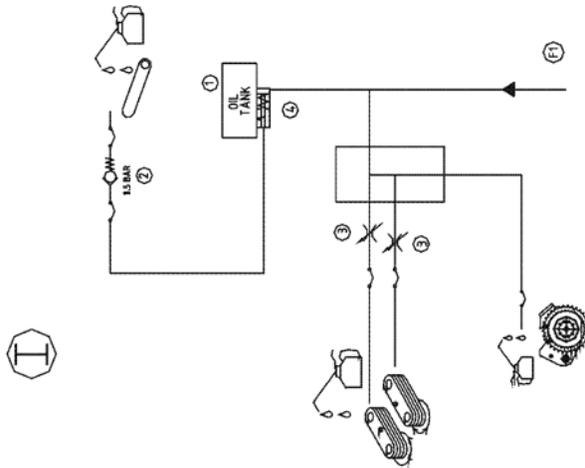
Version: 2L-002-750-1000 (korj.2.2.2000)

POS	NAME	NOTE	pcs	
			750	1000
1	Big block		1	1
2	Intermediate block		1	1
3	Small block		1	1
4	Rotator block		1	1
5	Track motor	Danfoss OMVU 400/K	2	
5	Track motor	Danfoss OMVU 500/K		2
6	Saw motor	Volvo F12-40/K	1	1
7	Rotator motor	Danfoss OMV 630 B	1	1
8	Direction valve	Denison 4D01 3203 A302 B1G0Q	1	1
9	Direction valve	Mecman Wewde 42AD 10 1 DC	1	1
10	Saw valve	Sterling GS06 08 00N	1	1
11	Direction valve	Mecman Wewde 43 D 10 1 DC	2	2
12	Pressure reducing valve	TBA 100/250 bar	1	1
13	Relief valve	CV3-010	4	4
14	Pressure reducing valve	TBA 100/210 bar	2	2
15	Magnetic valve	Vickers	1	1
16	Magnetic valve	Denison D01 35 111 0101 00B1 G0Q	2	2
17	Pressure reducing/relief valve	Command Control PRRS 10 NS 0S 50	3	3
18	Saw cylinder adjustable choke	Vickers FCVS 10 SD NVF	1	1
19	Pressure reducing valve	TBA 100/250	2	2
20	Pressure reducing block		1	1
21	Relief valve	Sun 9ES5	1	1
22	Flow control with check valve	FT 1251/1-1-14	2	2
23	Accumulator		1	1
24	Magnetic valve	Denison 4D01 3208 0302 B1G0Q	1	1
25	Magnetic valve	Comatrol 06/42/05	1	1
26	Check valve	0.5 bar mounted on hose	1	1
27	Flow control with check valve	FT 1254/5-1-14	1	1



# LUBRICATION CHART

## KETO-500



1. LUBRICATION OIL TANK

2. LUBRICATION REDUCING VALVE 0.5bar

3. LUBRICATION ADJUSTABLE CHOKE FT 1237/2-1-18

4. LUBRICATION PUMP HULTDIN S02 [2cm<sup>3</sup>]

5. LUBRICATION PUMP 5mm STROKE LIMITER [1.23cm<sup>3</sup>]

6. OIL TANK [FRAME]

V-882	LUBRICATION CHART, KETO-HARVESTERS 2000 SERIES		
Pinnusluku numero	Osa tai kokonaisu- nimitys	Standardi tai luettelo	Muoto, malli, määrä tai lueimerkki
Yleis- toleranssi	Mittakaava	Liittyy	
Piiri	MA		Ent. Uusi: 15.11.1998
Suun- tauki	JH		V-002
Hyv.	Massa		
			PÄYHDYKIRJA VOITTELU

*Keto-Harvesters*

Muutos

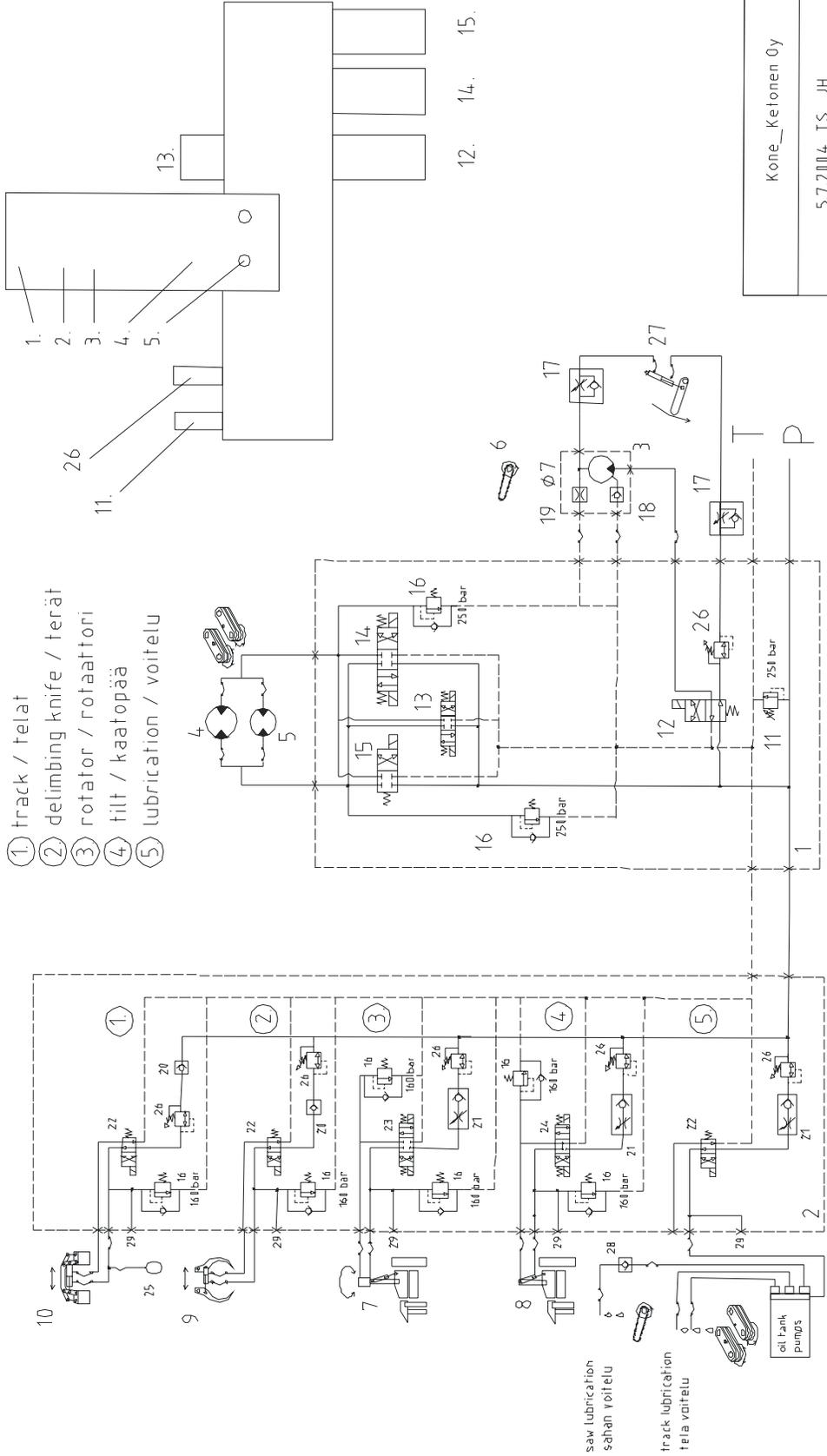
Pvm

Muut: amut

Hyv.

# KETO-SUPREME HYDRAULIC CHART / KAAVIO

- ① track / telat
- ② delimiting knife / terät
- ③ rotator / rotaattori
- ④ filt / kaatopää
- ⑤ lubrication / voitelu



Kone\_Kelonen Oy  
5.7.2004 TS, JH

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# KETO-1 50 SUPREME HYDRAULIIKAAVIO / HYDRAULIC CHART

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POS	NIMI/KI	NAME	NAME	HUOM./ NOTE	KPL	PCS
1	Iso lohko		Big block		1	
2	Pikkulohko		Small block		1	
3	Sahan L-kappale		Saw L-piece		1	
4	Vetomootori		Track motor	Danfoss TMT 250.315	1	
5	Vetomootori		Track motor	Danfoss TMT 250.315	1	
6	Sahan moottori		Saw motor	VOAC F11-19/K	1	
7	Kääntö moottori		Rotator motor	Danfoss OMH 500	1	
8	Tilt sylinteri		Tilt cylinder		1	
9	Teien sylinteri		Knife cylinder		1	
10	Tela sylinteri		Track cylinder		1	
11	Pääpaineenrajoitusventtiili		Main pressure relief valve	SUN RPGGFCN	1	
12	Suuntaventtiili NS10	Saha, risti - suora	Solenoid valve NS10	Bucher WEVDE 42-A-2-24VDC	1	
13	Suuntaventtiili NS06	syöttö 1 risti - suljettu- suora	Solenoid valve NS06	Denison 4D01 3203 A302 B1G0Q	1	
14	Suuntaventtiili NS10	syöttö 2 risti - suljettu - suora	Solenoid valve NS10	Bucher WEVDE 43-D-10-24VDC	1	
15	Suuntaventtiili NS10	syöttö 3 risti - suljettu	Solenoid valve NS10	Bucher WEVDE 42-AD-10-24VDC	1	
16	Paineenrajoitusventtiili		Pressure relief valve	PLC053-250bar 3930000K187	2	
	Paineenrajoitusventtiili		Pressure relief valve	PLC053-160bar 3930000K181	6	
17	Vastusvastaventtiili		Adjustable choke	R 1/4"	2	
18	Vastaventtiili	sahan vuotolinja	Check valve	R 3/8" Faster VU38M	1	
19	Kuristin (nipassa)		Throttle (in nipple)	R1/2"-R3/8" (Ø 7)	1	
20	Vastaventtiili		Check valve	Vickers CV-3-10-P-0-20	2	
21	Virtauksen säätöpatruuna		Oil flow regulator	Hydrofors FCI020100N	3	
	vastaventtiilillä		with check valve	HF 109512		
22	Magneettiventtiili	muut liikkeet	Magnetic valve	Comatrol ED 064205	3	
23	Magneettiventtiili	Rotaattori	Magnetic valve	Comatrol ED 064306	1	
24	Magneettiventtiili	Tilt	Magnetic valve	Comatrol ED 064309	1	
25	Paineakku		Pressure accumulator	0,75 litre / 60 bar	1	
26	Säädettävä Pa-/Pventtiili		Pressure reducing valve	Command Control PRRS-10-N-S-0-50-001130	6	
27	Sahan sylinteri		Saw cylinder		1	
28	Vastaventtiili		Check valve	R1/4"	1	
29	Mittauspikaliitin	Measuring quick release	Measuring quick release	R1/4" - M16x2	6	



# KETO-100 supreme HYDRAULIKAAVIO / HYDRAULSCHEMA / HYDRAULIC CHART

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POS	NIMIKE	NAMN	NAME	HUOM/OBS/NOTE	KPL/ST/QTY
1	Isolohko	Stora blocket	Big block		1
2	Pikkulohko	Lilla blocket	Small block		1
3	Sahan moottorin lohko	Sågmotorblock	Saw motor block		1
4	Vetomoottori ESP	Drivmotor NS	Traction motor NS	Danfoss TMT 315	1
5	Vetomoottori SP	Drivmotor SS	Traction motor SS	Danfoss TMT 250	1
6	Sahan moottori	Sågmotor	Saw motor	VOAC F11-19/K	1
7	Rotaattori	Rotator	Rotator	Danfoss OMH 500	1
8	Kaatoapään sylinteri	Tiltcylinder	Tilt cylinder		1
9	Terien sylinteri	Knivecylinder	Knife cylinder		1
10	Telojen sylinteri	Bandcylinder	Track cylinder		1
11	Paineenraj. venttiili	Tryckregl. ventil	Pressure relief valve	SUN RPGFCN	1
12	Magneettiventtiili	Magnetventil	Magnetic valve	Bucher Wevde-42-A-2 24V DC	1
13	Magneettiventtiili	Magnetventil	Magnetic valve	Denison 4D01 3203 A 302 B1G0Q	1
14	Magneettiventtiili	Magnetventil	Magnetic valve	Bucher Wevde-43-D-10-2 24V DC	1
15	Magneettiventtiili	Magnetventil	Magnetic valve	Bucher Wevde-42-AD-10-2 24V DC	1
16	Paineenraj. venttiili	Tryckregl. ventil	Pressure relief valve	Parker PLC053 250 bar	2
17	Paineenraj. venttiili	Tryckregl. ventil	Pressure relief valve	Parker PLC053 160 bar	6
18	Vastusvastaventtiili	Backslagsventil	Adjustable choke		2
19	Västaventtiili	Backventil	Check valve		1
20	Kuristin nipassa	Strypningnippel	Throttle		1
21	Västaventtiili	Backventil	Check valve	Vickers CV 3-10-P-0-20	2
22	Virtauksen säätöpatruun Flödjusteringsventil	Flödjusteringsventil	Oil flow regulator	Hydrofors HF109512	3
23	Suuntaventtiili	Magnetventil	Check valve	Comatrol ED 064205	3
24	Suuntaventtiili rotaattori	Magnetventil rotator	Check valve rotator	Comatrol ED 064306	1
25	Suuntaventtiili kaatoapään	Magnetventil tilt	Check valve tilt	Comatrol ED 064309	1
26	Paineakku	Tryckackumulator	Pressure accumulator	60 bar	6
27	Paineenal. venttiili	Tryckreduc. ventil	Pressure reducing valve	Command Control	6
28	Sahan sylinteri	Sågcylinder	Saw cylinder		1
29	Västaventtiili	Backventil	Check valve	Faster VU14M	1
30	Mittauspikalitiin	Tryckmätm. snabbkoppling	Measuring quick release		1



KETO-51 supreme HYDRAULIIKAAVIO /HYDRAULIK SCHEMA

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POS	NIMI/KE	NAME	HUOM./OBS./NOTE	KPL./ST.
1	Iso lohko	Big block		1
2	Pikku lohko	Small block		1
3	Sahan "ryöstäjä"	Saw L-piece		1
4	Vetomoottori SP	Track motor	Danfoss OMSS 160cc	1
5	Vetomoottori ESP	Track motor	Danfoss OMSS 200cc	1
6	Sahan moottori	Saw motor	VOAC F11- 10/K	1
7	Kääntö moottori	Rotator motor	Danfoss OMH400	1
8	Tilt sylinteri	Tilt cylinder		1
9	Terien sylinteri	Knife cylinder		1
10	Tela sylinteri	Track cylinder		1
11	Pääpaineenrajoitusventtiili	Main pressure relief valve	SUN RDDA-LCN	1
13	Paineenrajoitusventtiili	Pressure reducing valve	Ajo eteen,taakse, tilt ylös	1
14	Magneettiventtiili	Magnetic valve	PLC053 250 bar	1
15	Suuntaventtiili	Direction valve	Sterling (8-2019)	3
16	Paineenrajoitusventtiili	Pressure reducing valve	Denison (2-kela/Spole) PLC053 160 bar	3
18	Vastaventtiili	Check valve	R 1/4" FASTER VU14M	1
19	Kuristin (nipassa)	Throttle (in nipple)	Ø 5	1
20	Vastaventtiili	Check valve	Parker CV081P	3
21	Magneettiventtiili	Magnetic valve	Parker DS 084 B	3
22	Magneettiventtiili	Magnetic valve	Parker DS 085 C4	1
23	Kuristin	Throttle	Parker NVH081S	3
24	Magneettiventtiili	Magnetic valve	Parker DS 085 C1	1
25	Paineakku	Accumulator	0,2 l (60 bar)	1
26	Säädettävä Pa-/Prventtiili	Pressure reducing valve	Parker PRH081S030	3
27	Sahan sylinteri	Saw cylinder		1
28	Voitelupumppu	Lubrication pump	Hultdin SO2	3
29	Mittauspikaalit in	Measuring point	R1/4"- M16x2	5
31	Vastaventtiili	Check valve	0,5 bar	1

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